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A constructed wetland near Jackson, Wyoming.

~Photo courtesy of USDA NRCS

How Water Quality Standards Show The Way

~Karen Hamilton, EPA Region 8

This is the second in a series of articles describing how certain sections of the Clean Water Act may provide tools for watershed protection and restoration. In the first article (Winter 2001), a very brief description of the intersection between watershed planning and the Clean Water Act was given.

"Would you please tell me which way I ought to go from here?" asked Alice.
"That all depends a great deal on where you want to get to," said the Cat.

From Alice In Wonderland, by Lewis Carroll

Water quality standards describe where you want to get to. Water quality standards are goals for the water body you are concerned with, which might be a stream segment, a lake, or an estuary. Having a goal for the stream or lake is necessary in order to determine if the water quality is good enough for the uses the water is expected to provide. You need goals to determine if the water quality needs improvement, and whether the attempts to improve it are working.

The Clean Water Act requires states to establish water quality standards with full public input and participation. These standards are the regulatory basis for pollution controls based on water quality rather than technology.

States are required to review the standards every three years. New information about the stream segments or lakes may indicate that the state should revise its standards. In the past several years, as watershed coalitions have developed, these reviews have had more public interest and participation. Sometimes, it is the watershed coalitions which have provided credible data for the agency to use in review of its standards.

Pieces, Parts, Nuts and Bolts

Water quality standards have three parts:

1. The beneficial uses of the water body designated by the State agency (designated beneficial uses);
2. Criteria that are necessary to protect the designated uses of the water body; and
3. An antidegradation policy.

Standards also may include policies for

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things such as variances and mixing zones.

Designated Beneficial Uses

Wherever attainable, water quality standards should achieve a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water (fishable/swimmable). Standards also should consider the use and value of State waters for public water supplies, agriculture, and industrial purposes and navigation. States examine the suitability of a water body for the uses based on the physical, chemical, and biological characteristics of the water body, its geographical setting and scenic qualities, and the social-economic and cultural characteristics of the surrounding area.

Based on what the public wishes to protect, the general use categories may be quite specific. For example, most states have at least two categories of fish uses: warm water fisheries and cold water fisheries. These may be further divided into subcategories such as salmon spawning (a cold water subcategory). Recreation is usually divided into primary contact (e.g. swimming) and secondary contact (e.g. boating).

An “**existing use**” is a fishing, swimming, or other use that has actually occurred since November 28, 1975; or whatever the water quality is suitable to allow the use to be attained unless there are physical problems, such as habitat or flow, that prevent the use from being attained.

Sometimes a *use attainability analysis* is needed to determine what uses the water body can be expected to provide, even if it is not supporting those uses now. A use attainability analysis is also needed if none of the



In many states, agriculture is one of the designated uses whereby rivers and streams must be of suitable quality to support irrigation and livestock watering.

~Photo courtesy of USDA NRCS

designated uses are “fishable/swimmable” uses, or if a State wants to remove a “fishable/swimmable” designated use from the water body.

Numeric Criteria

To protect the Designated Beneficial Uses, states adopt numeric criteria for specific parameters such as dissolved oxygen, temperature, metals concentrations and salts. Numeric criteria are important for toxicants known to affect humans or aquatic life either acutely or chronically. Numeric criteria may also be adopted that describe the expected biological community of a water body or the maximum levels of contaminants that can be found in sediments. So-called biocriteria and sediment criteria are relatively new and have not been adopted by many State water quality programs.

Narrative Criteria (aka “free froms”)

All waters shall be *free from* substances attributable to wastewater discharges or other pollutant sources that:

- Settle to form objectionable deposits;
- Float as debris, scum, oil, or other matter forming nuisances;
- Produce objectionable color, odor, taste or turbidity;
- Cause injury to, are toxic to, or produce adverse physiological responses in humans, animals or plants; or
- Produce undesirable or nuisance aquatic life.

Antidegradation Policy

The antidegradation concept was originally based on the spirit, intent, and goals of the Clean Water Act, especially the clause “restore and maintain the chemical, physical and biological integrity of the Nation’s waters.” States must adopt an antidegradation policy and procedures to implement it as part of their water quality standards program. This policy should be used when a new or revised activity that is regulated (e.g. needs a discharge permit) is going to lower water quality in the receiving water. EPA encourages states to use their policy when unregulated activities will negatively impact water quality. There are three “tiers” of an antidegradation policy.

Tier 1 protects “existing uses” which is a minimum level of water quality protection.

Tier 2 applies to waters whose quality exceeds that necessary to protect the fishable/swimmable use goals of the Clean Water Act. Water quality may not be lowered to less than the level necessary to fully protect these and other existing uses. Before *any* lowering of water quality can be allowed, there must be an antidegradation review. The review must show that the economic and social benefits for the activity clearly outweigh the





The pristine character of many rivers are most protected using a Tier 3 antidegradation policy.

~Photo courtesy of USDA NRCS

benefit of maintaining water quality above that required for “fishable/swimmable” water, and that both cannot be achieved.

Tier 3 applies to Outstanding National Resource Waters (ONRW) where ordinary use classifications and supporting criteria may not be sufficient or appropriate. Short-lived changes in water quality may be allowed, but such changes in water quality should not impact existing uses or alter the essential character or special use that makes the water an ONRW.

Water quality standards are goals established for water bodies within a regulatory framework. While they may not be the only goals your watershed plan incorporates, they can be quite important to activities designed to maintain and restore water quality. They are, at a minimum, a description of where you want to get to. They are essential for evaluating the condition of water bodies because they provide the context for the data you collect from your monitoring activities.

The preceding was a simplified explanation of general water quality standards. The standards are developed differently by each State, and the regulations and policies can be complicated. Nevertheless, you may find it valuable to become familiar with standards setting and the review processes in your State. To find out more, visit the EPA web site at

<http://www.epa.gov/ost/programs.html> This web site will provide you with links to water quality standards for your State. For more information, please contact **Karen Hamilton** at 303-312-6236 or hamilton.karen@epa.gov

Upcoming Training Opportunities

~Contributed by Kim Larson, EPA Region 8

Streambank and Channel Stabilization and Reservoir Water Quality Enhancement Techniques

This 5-day workshop includes a variety of technical presentations on:

- channel rehabilitation;
- channel and stream stability;
- physical and environmental impacts of channelization;
- bendway weirs;
- traditional bioengineering and innovative bank; protection methods;
- stream hydraulics;
- sediment transport;
- reservoir limnological processes and water quality management opportunities; and
- in-reservoir and tailwater quality enhancement technologies.

Participants will acquire knowledge through classroom lectures, case histories, and field site reconnaissance exercises.

Workshop Dates: Denver, CO – July 16-20, 2001
Louisville, KY – August 27-31, 2001

Registration: There is a \$200 non-refundable, but transferable registration fee if registered 30 days prior to the workshop. After that, the registration fee is \$300. The workshop is limited to the first 50 paid registrants.

To register for the workshop or for additional information, please contact **Ms. Laurin Yates** at 601-634-3792; Fax 601-634-4158; or e-mail laurin.i.yates@wes02.usace.army.mil

Or visit the web site:

<http://chl.wes.army.mil/training/lectures/wqual2001>

5th Annual Missouri River Natural Resources Conference. June 24-27, 2001 Great Falls, Montana.

For more information, visit

<http://infolink.cr.usgs.gov/events/01.htm>

Colorado Watershed Assembly Evolves

~Richard Fox, President, CWA and Marc Alston, EPA Region 8

On February 2, 2001 the Colorado Watershed Assembly (CWA) held an open meeting in Summit County. More than 40 participants from diverse organizations across Colorado gathered to discuss how the Assembly will

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pursue its mission to support collaborative efforts to protect and improve the conservation values of the land, water, and other natural resources of Colorado watersheds.

The major topic of discussion during the one-day event revolved around the structure of the evolving organization. The Assembly model is an inclusive "organization of organizations." From small, citizen-driven watershed groups to state and federal agencies supporting watershed activities, the Assembly is a medley of expertise in which all organizations with an interest in watersheds can participate. Participants overwhelmingly voiced support for the proposal brought before them. Governing structures, including Steering and Executive Committees, were agreed to as were dues and voting procedures. Initial officers have been elected. Richard Fox was elected President, Chris Rowe of Colorado Watershed Network is now Secretary, and Carol Ekarius of the Upper South Platte Watershed Protection Association is now Treasurer.

Government agencies are not voting members, though they are greatly encouraged to participate in all levels of the Assembly, including the Steering Committee. Currently, agencies are strongly represented and have their own committee so that they can continue to be an integral part of all Assembly activities. Individuals are also welcome to participate in Assembly activities, but do not have voting privileges, though they are encouraged to become a member of their local watershed group.

Committees have been established to take charge of the Assembly's four major activities: the Annual Conference, Outreach & Communication, Web Site and an Agency Working Group. These committees are responsible for organizing the annual conference, disseminating information about possible funding, maintaining the Assembly Web Site with new laws and regulations (<http://www.coloradowatershed.org/CWA.htm>), supporting a list server, and facilitating information transfer between watershed groups and state and federal agencies. The second annual Colorado Watershed Assembly will be held September 7th and 8th, 2001, at the Holiday Inn-Summit County in Frisco. We encourage you to attend and participate in the Assembly's efforts to protect Colorado's water resources. For more information, please contact **Richard Fox**,

"Unfortunately, our affluent society has also been an effluent society."

Hubert H. Humphrey

National Director of Trees, Water For People in Fort Collins, Colorado. twp@treeswaterpeople.org

Missouri River Currents: Snapshot on Missouri River Water Quality

~Ayn Schmit, EPA Region 8

Most people familiar with the Missouri River could tell you that there are several endangered species that depend upon the Missouri River and its floodplain. They could probably even tell us that pallid sturgeon, piping plovers and least terns are among the species in trouble. Based on the efforts of the Army Corps of Engineers and the U.S. Fish and Wildlife Service to develop good information on the status of these species and to communicate that information to the public, there is fairly widespread awareness regarding endangered species among people living in the basin.

Unfortunately, we know less about the status of water quality along the roughly 2,500 miles of the Missouri River. Monitoring the water quality of such a large resource is hampered by inadequate funding and equipment and lack of proven sampling designs and methods to fully characterize the chemical, physical and biological condition of the river. However, there are certainly indications of some significant water quality problems. This is a serious concern, because many of the beneficial uses of the river such as drinking water, industrial and agricultural water supply, recreation and aquatic life use depend on good water quality.

First, a quick review of how water quality is managed. The federal Clean Water Act requires each of the seven states through which the Missouri River flows to establish water quality standards for their portion of the river. The standards include designated uses for the river, and criteria which establish pollution limits to protect each of those uses. Designated uses may include public water supply, contact recreation and aquatic life. Tribes may also establish water quality standards for waters crossing tribal lands. For more detailed information on each state, check the links to state websites provided at EPA's website:

<http://www.epa.gov/region8/states> Because designated uses, water quality criteria and monitoring programs vary from state to state, the water quality picture on interstate rivers like the Missouri can be a somewhat confusing "patchwork."

Despite the lack of adequate resources for state and federal monitoring of the Missouri River, some information about water quality on the Missouri River exists. The Clean Water Act requires each state to identify waters not fully meeting their designated uses.



EMAP sampling on the Missouri River

~Photo by Billy Schweiger

River segments not meeting designated uses are identified on each state's 303(d) list of impaired waters. Four of the seven Missouri River mainstem states have identified portions of the River as impaired.

According to the states, nearly two-thirds of the River is failing to fully meet designated uses. The causes of water quality impairment vary from state to state, but include aquatic habitat degradation, siltation, disease-causing organisms, nutrients, and temperature. For many contaminants known to be used within the watershed, little or no monitoring information is available.

States and federal agencies will need to continue to work together to better understand the nature and extent of water quality problems on the river and to initiate joint efforts to address those problems on this interstate resource. One EPA effort to improve understanding about the Missouri River. This undertaking is called the Upper Missouri River Environmental Monitoring and Assessment Program (EMAP) project on the Garrison reach and Lake Oahe in North and South Dakota. It is a 5-year pilot project which will provide a snapshot of the biological health of this expanse of the River, and will help refine methods for monitoring ecological condition on large rivers and reservoirs. Such cooperative efforts will ensure continued enjoyment of the many benefits of the Missouri River that depend on good water quality.

For more information, contact **Ayn Schmit** at 303-312-6220 or schmit.ayn@epa.gov or **Dr. Dave Bolgrien**, EPA Office of Research and Development Duluth Laboratory 218-529-5216 or bolgrien.david@epa.gov or **Larry Shepard**, EPA Region 7 at 913-551-7441 or shepard.larry@epa.gov

Environmental Monitoring and Assessment Program (EMAP)

~Eric Hyatt, EPA Region 8

The Environmental Monitoring and Assessment Program (EMAP) has been moving forward rapidly. This summer will mark its second full field season for inland surface streams in the western United States. EPA Region 8 now has five of six States committed to operating within a cooperative agreement for the life of the research project. Though Utah has not yet entered into a formal agreement, the State has been instrumental in assisting in the site verification process, reconnaissance, securing access permission, and helping in site collection on an informal basis.

There are two distinct parts to the EMAP program in the western United States. The EMAP Western Pilot (EMAP-W) is designed to sample inland surface streams and coastal waters in and adjacent to the 12 continental western states, as well as providing biological condition information on estuaries surrounding Alaska and Hawaii. EPA's EMAP western pilot website:

<http://www.epa.gov/emap/wpilot>

The EMAP Upper Missouri River project is a part of the larger EMAP-W program, but is designed to sample and provide information on part(s) of the mainstem Upper Missouri River and specific reservoirs and adjacent riparian environments. For more information, please contact **Eric Hyatt**, EMAP Coordinator, 303-312-6504 or hyatt.eric@epa.gov EPA Region 8's EMAP website: <http://www.epa.gov/region08/water/emap.html>

Stormwater Pollution Control in Summit County

~Brent Truskowski, EPA Region 8

EPA Region 8 funded a project under the Clean Water Act §104(b)(3) to pilot an intergovernmental, non-regulatory approach to preventing stormwater runoff from construction sites in Summit County, Colorado. The project was recently completed, accomplishing its major goal of improving the implementation rate of Best Management Practices (BMPs) at construction sites, thereby preventing sediment and nutrient pollution of the Blue River watershed.

In 1998, the Summit Water Quality Committee proposed a project which would fund an Intergovernmental Stormwater Coordinator to inspect BMPs at construction sites, and to provide education and on-site technical assistance implementing BMPs. Due to the scenic beauty, and the numerous international resort

communities in Summit County, the area is experiencing rapid growth. The goal of the project was to provide staff and resources to educate the construction contractors on the importance and function of erosion control BMPs. The project focused on providing technical assistance by a qualified individual trained in erosion control working as a liaison between local regulators and the contractors and developers. While the project initially targeted the private construction industry, public infrastructure projects, including roads and utility installations, were also targeted.

The project has resulted in the increased utilization of sediment reduction practices by over 60%. The primary benefit of this project is working to ensure that erosion control measures are installed correctly and maintained throughout the life of the project. The project also published and distributed a manual titled Erosion and Sediment Control During Construction. This manual has proven to be a very strong and valuable resource in the field, focusing on unique high-altitude problems. The manual is being distributed through the local planning and engineering departments, at locally held stormwater management courses and to individual construction sites via the Erosion Control Specialist site visits/inspections.

For more information regarding this project, please call **Mr. Lane Wyatt** at the Summit Water Quality Committee at 970-468-0295 X116, or e-mail at gqlane@colorado.net or **Mr. Brent Truskowski** at 303-312-6235, or e-mail truskowski.brent@epa.gov

May is National Wetlands Month

~Paul McIver, EPA Region 8

May 2001 is National Wetlands Month and the theme is "American Wetlands: Keep 'Em Native." Wetland stewards across the country will remove invasive exotic plants from local wetlands and educate others about the importance of native species through a variety of projects. 2001 is the 10th anniversary of American Wetlands Month.

Over half of the wetlands in the United States have been lost to development, agriculture, draining and filling. The biodiversity of wetlands makes them among the most important of all of our ecosystems when it comes to wildlife. More than 10,000 species (20 percent of the world's freshwater fish) have become extinct, threatened or endangered in recent years due to the loss of wetlands. Amphibians, fish and many species of birds are at high risk in many areas in the United States when wetlands are lost.



Montane wetlands in Rocky Mountain National Park

~Photo by Paul McIver

Wetlands store water during floods which slows the release of water and reduces erosion it can cause. Wetlands are sources of ground and surface water for domestic agriculture needs. They act as filters of excess nutrients such as nitrates and chemical contaminants, and remove sediments. These filtration functions are already in place and are provided to the public at no additional cost. Wetlands also are places of aesthetic value for wildlife viewing, photography, nature walks and environmental education.

Wetlands can be seen at a number of places. They are often along rivers and streams, and in urban settings such as parks. They can be found in the mountains, in our national parks, wilderness areas, and in state parks. Out on the plains of the Dakotas, prairie potholes provide habitat for over half of the waterfowl in North America.

For more information, contact **Paul McIver**, EPA Region 8 at 303-312-6056 or mciver.paul@epa.gov for information about wetlands brochures and fact sheets.

Additional information on invasive species and coordinating your own American Wetlands Month events can be found by visiting the Izaak Walton League's web site at <http://www.iwla.org/sos/awm>

"One-Stop Shopping" Grants Update

~Stacey Eriksen, EPA Region 8

EPA Region 8's Ecosystems Protection Program issued a combined Request for Proposals for five different ecosystems funding programs in November, 2000. Grant programs included Regional Geographic Initiative, wetlands and water quality funding, Total Maximum Daily Load (TMDL) funding and the Red

River Basin Watershed Information Network funding. Grant proposals were submitted by January 12, 2001 and the response was tremendous. Region 8 is nearing the end of the evaluation process, with final decisions to be announced early June. All submittals will receive a response letter after the final selections have been made. For further information, please contact **Pam Dougherty** at 303-312-6012 or dougherty.pam@epa.gov

Grant Opportunities

~Stacey Eriksen, EPA Region 8

2001 Kodak American Greenways Awards:

The Conservation Fund and Eastman Kodak Company announced they are now accepting applications for the 2001 Kodak American Greenways Awards program. Applications for the awards, which provide important seed money to stimulate greenway planning and design, may be submitted to the Conservation Fund until June 1, 2001. The award recipients, announced in early fall, will receive grants of \$500 to \$2,500 to support their pioneering work in linking the nation's natural areas, historic sites, parks and open space.

To learn more about the American Greenway's Program or to obtain an application, visit the Fund's website at <http://www.conservationfund.org> click on American Greenway, then click on Kodak award. You can also contact **Leigh Anne McDonald**, American Greenways Coordinator, The Conservation Fund, 1800 North Kent Street, Suite 1120, Arlington, VA 22209, phone 703-526-6300, or by email at:

lmcdonald@conservationfund.org

Watershed Assistance Grants, 2001:

In April, 2001, the U.S. Environmental Protection Agency's Office of Wetlands, Oceans, and Watersheds selected River Network to coordinate and administer the Watershed Assistance Grants Program (WAG). The purpose of the WAG Program is to provide small grants to local watershed partnerships to support their organizational development and long-term effectiveness. While there will likely be a few changes from the application process used in 2000 and the application process that will be put in place for 2001, River Network and EPA expect that the forthcoming 2001 application process will be similar to the one in 2000.

Information on the 2001 application process, including eligibility and selection criteria will be made available around the first week of May on River Network's Website at: <http://www.rivernetwork.org>

National Fish and Wildlife Foundation Challenge Grants:

The National Fish and Wildlife Foundation (NFWF) has a call for project proposals under its Challenge Grant program. Project proposals are received on a year-round, revolving basis with three decision cycles per year. Next deadline for pre-proposals is June 1, 2001. The next call for pre-proposals under this program is October 1, 2001, then again on March 1, 2002. Proposals should be only 1-2 pages, and they should have a cost-share of at least 1:1 and preferably 2:1. Eligible grant recipients include federal, state, and local governments, educational institutions, and nonprofit conservation organizations. Grants range from \$10,000 - \$150,000, based upon need. Please take the time to review the Challenge Grant program at: <http://www.nfwf.org>



Camping along the Colorado Trail

~Photo by Greg Davis

"We forget that the water cycle and the life cycle are one."

Jacques Cousteau



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